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On lacunary analogs of the Poincaré theta-series and their applications

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Abstract

We consider Fuchsian groups of linear-fractional transformations such that each vertex of the fundamental polygon is common for an even or infinite number of fundamental congruent polygons meeting at this point. The whole collection of transformations splits into two disjoint sets. For these sets we introduce two lacunary kernels whose sum represents the well-known analog of Chibrikova and Sil'vestrov's kernel and study their properties. We introduce automorphic forms of dimension -4m that differ from the Poincaré theta-series. We indicate an application of one of the constructed lacunary kernels which does not include the Cauchy kernel to solving some boundary value problem with a shift of the contour inside the domain.

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Keywords

Boundary value problem for analytic functions, Group of linear-fractional transformations, Riemann surface